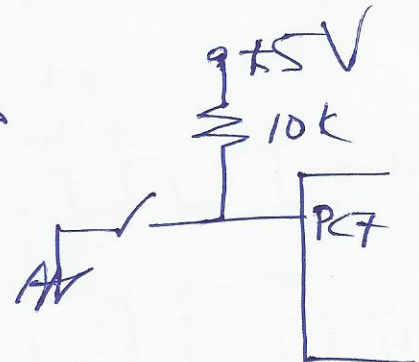


Q1. Assume the following 7-segment truth table. Connect the 7-segment display pins (a to g) to port B of the PPI. Connect a selector switch to pin PC₇ of the PPI. Write an **OPTIMUM** program to repeatedly display, at 1Hz rate, 0 1 2 3 4 5 6 7 8 9 (i.e. counting up) when the switch is ON (ON = 0) or to display 9 8 7....etc...2 1 0 (i.e. counting down) when the switch is OFF (OFF = 1) at 0.5 Hz rate.

Draw CLEARLY the switch circuit only.

D	C	B	A	g	f	e	d	c	b	a	
0	0	0	0	0	1	1	1	1	1	1	3F
0	0	0	1	0	0	0	0	1	1	0	06
0	0	1	0	1	0	1	1	0	1	1	5B
0	0	1	1	1	0	0	1	1	1	1	4F
0	1	0	0	1	1	0	0	1	1	0	...
0	1	0	1	1	1	0	1	1	0	1	...
0	1	1	0	0	0	0	0	1	1	1	07
0	1	1	1	1	1	1	1	1	1	1	7F
1	0	0	0	1	1	1	1	1	1	1	6F
1	0	0	1	1	1	0	1	1	1	1	...



LET db 3F, 06, 5B, ..., 7F, 6F

Program PPI

```

LEA BX, LET
MOV DX, OFFE4h
BACK: IN AL, DX
TEST AL, 80h
JNZ DOWN
MOV DX, OFFE0h
XOR AL, AL
NEXT: PUSH AX
NEXT: XLAT
OUT DX, AL
CALL DLY1000
POP AX
INC AL
CMP AL, 9
JB NEXT
JMP BACK

```

DOWN:

```

MOV DX, OFFE0h
MOV AL, 9
MORE: PUSH AX
XLAT
OUT DX, AL
CALL DLY05
POP AX
DEC AL
JNZ MORE
JMP BACK

```